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This work deals with the detection of non-emergent small structures like mosaic, hidden under a plaster layer, with various spatial layout and nature.
A first feasibility study using a unique sample for one type of defective patchworks was presented in [1]. In this previous study analysis was mainly focused on thermal contrast [2].
In the present study, square pulse thermography experiments were carried out, in laboratory conditions, on different samples. Figure 1 show a view of the hidden structures and the laboratory set up.

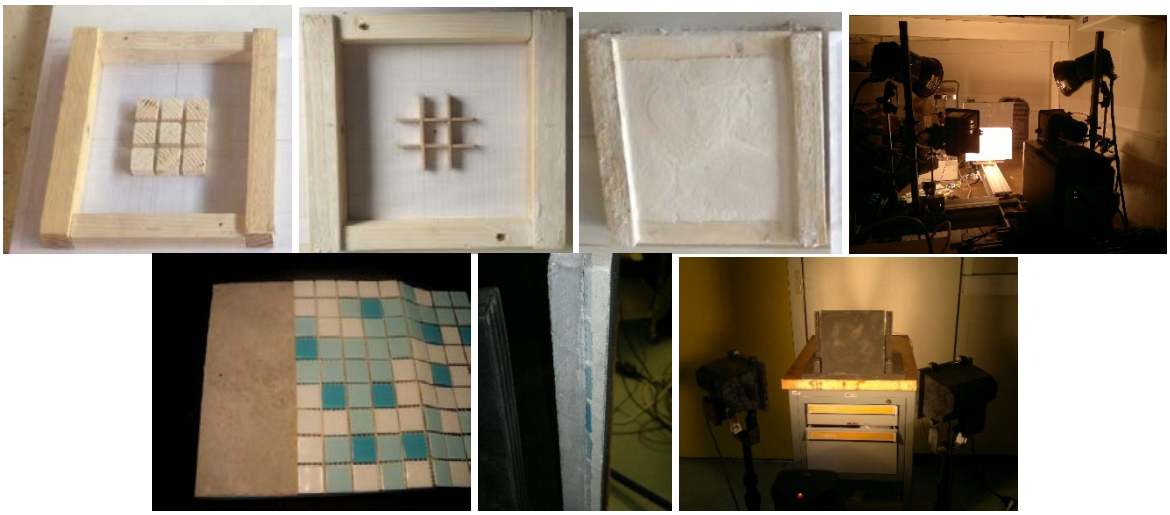

Figure 1 View of some samples and of experimental set up in laboratory

At the final 9 different samples were studied. For 8 configurations thermal numerical simulations were also realized under FLUENT™. They were used to generate simulated infrared thermal sequences.
Three post processing approach [3-5] by PPT, SVD and Polynomial analysis were conducted on this experimental and simulated data set. Results obtained are analyzed and discussed. Finally, influence of IR camera used will be also addressed and discussed in the dissertation.

Keywords: NDT, Square Pulse Thermography, Cultural heritage, Hidden structures

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